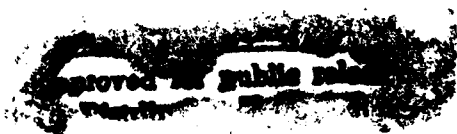


AD-A277 876



DLA-94-P20042

**CORPORATE QUALITY
EFFECTIVENESS SENSING TECHNIQUE
(QUEST)**



DECEMBER 1993

DTIC
ELECTE
APR 06 1994
S E D

94-10452



DTIC QUALITY INSPECTED 3

FOR
**DEPARTMENT OF DEFENSE
DEFENSE LOGISTICS AGENCY
Executive Director (Contract Management)
CAMERON STATION
ALEXANDRIA, VA 22304-6100**

INSIGHT THROUGH ANALYSIS

DORO

CORPORATE RESEARCH

94 4 5 117

DLA-94-P20042

CORPORATE QUALITY EFFECTIVENESS SENSING TECHNIQUE (QUEST)

DECEMBER 1993

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**DEPARTMENT OF DEFENSE
DEFENSE LOGISTICS AGENCY
Executive Director (Plans & Policy Integration)
CAMERON STATION
ALEXANDRIA, VA 22304-6100**

DTIC QUALITY INSPECTED 3



**DEFENSE LOGISTICS AGENCY
HEADQUARTERS
CAMERON STATION
ALEXANDRIA, VIRGINIA 22304-6100**



IN REPLY
REFER TO

CAI

FOREWORD

The development of QUEST 4.0, like earlier versions, benefited immeasurably by the contribution of the Study Advisory Group (SAG). This group of Quality Assurance experts from throughout the Defense Contract Management Command provided valuable assistance in designing the model and generating subjective weighting factors for consistency in the metrics. We are very grateful for their enthusiastic support throughout this effort.

This report is intended to document the development of QUEST 4.0. It was written to also serve as a guide to users, new and former, in understanding how QUEST ratings are computed and presented. More detailed documentation is available upon request.

Christine L. Gallo

CHRISTINE L. GALLO
Executive Director
(Plans and Policy Integration)

TABLE OF CONTENTS

<u>Section</u>	<u>Title</u>	<u>Page</u>
	FOREWORD	iii
	TABLE OF CONTENTS	v
	LIST OF TABLES	vii
1	INTRODUCTION	1-1
1.1	Background	1-1
1.1.1	QUEST 1.0	1-1
1.1.2	QUEST 2.0	1-1
1.1.3	QUEST 3.0	1-1
1.1.4	QUEST 4.0	1-1
1.2	Scope	1-1
1.3	Objectives	1-2
2	METHODOLOGY	2-1
2.1	Data	2-1
2.1.1	Data Sources	2-1
2.1.2	Exclusions	2-1
2.1.3	Data Linking	2-2
2.2	QUEST Indicators	2-2
2.2.1	Corrective Action Requests (CAR)	2-2
2.2.2	Product Quality Deficiency Reports (Customer Complaints)	2-2
2.2.3	Product Audit Results	2-2
2.2.4	Waivers	2-2
2.2.5	Material Review Board (MRB) Actions	2-3
2.2.6	Deviations	2-3
2.2.7	Engineering Change Proposals (ECP)	2-3
2.3	Indicator Measurement	2-3
2.3.1	Trend Measurement	2-3
2.3.2	Peer Comparison	2-4
2.4	QUEST Ratings	2-5
2.5	Organizational Roll Ups	2-5
2.6	Corporate QUEST	2-5
2.7	QUEST Validation	2-6
3	FINDINGS	3-1
3.1	QUEST Reports	3-1
3.1.1	Page Headers	3-1
3.1.2	Column Headings	3-1

TABLE OF CONTENTS (Continued)

<u>Section</u>	<u>Title</u>	<u>Page</u>
3.2	Validation Findings	3-4
4	CONCLUSIONS	4-1
5	RECOMMENDATIONS	5-1

LIST OF TABLES

<u>Number</u>	<u>Title</u>	<u>Page</u>
2-1	Weight Factors for QUEST Indicators	2-5
3-1	Sample QUEST 4.0 Report for a Section	3-2
3-2	Sample Corporate QUEST Report	3-3

SECTION 1 INTRODUCTION

1.1 BACKGROUND

1.1.1 QUEST 1.0

Quality Effectiveness Sensing Technique (QUEST) was developed by the Defense Logistics Agency (DLA) Operations Research Office (DORO) starting in 1986, with deployment throughout the nine Defense Contract Administrative Services districts in 1988-1989. QUEST Release 1.0 provided two sets of basic measures; one set measured in-house program compliance with the then existing Contract Quality Assurance Program (CQAP) and the other set measured the contractors conformance to contract requirements. For more information, documentation was published under DLA-LO Project 3071, Analysis of Quality Assurance (QA) Effectiveness.

1.1.2 QUEST 2.0

Release 2.0, fielded in 1990, involved minor changes to QUEST 1.0 but significantly reduced the cost of distributing the reports by incorporating electronic distribution vice hard copy (reference project DLA-90-P90271, Quality Effectiveness Sensing Technique (QUEST) Release II).

1.1.3 QUEST 3.0

When CQAP was replaced by the In-plant Quality Evaluation Program (IQUE), QUEST 2.0 became obsolete and was modified to reflect the new policy. The in-house measurement system was removed and QUEST 3.0 became strictly a tool for evaluating total contractor effectiveness. With the teamwork concept associated with IQUE, it was concluded that contractor effectiveness is a surrogate measure of IQUE total program effectiveness. QUEST 3.0 was completed in March 1991 under DLA-91-P90272, Quality Effectiveness Sensing Technique (QUEST) Release 3.0.

1.1.4 QUEST 4.0 (CORPORATE QUEST)

Since QUEST is totally dependent on the Quality Assurance Management Information System (QAMIS) for data, QUEST must be modified each time QAMIS changes structure. With a recent major change to QAMIS, a new version of QUEST was needed. QUEST 4.0 will take advantage of some newly added data elements to QAMIS to provide better measures of contractor quality assurance effectiveness.

1.2 SCOPE

QUEST 4.0 will provide measures of contractor quality assurance effectiveness for all contractors reporting data in QAMIS. Thus nearly all contractors under Defense Contract Management Command (DCMC) will be measured. Excluded contractors are those

administered by DCMC-International (foreign contractors), inactive contractors, and contractors with insufficient DCMC activity to reasonably produce a measure. For the first time, QUEST 4.0 will also provide "corporate" measures of effectiveness for large defense contractors by combining individual facility measures nationwide since most large contractors have production facilities in several DCMC districts.

1.3 OBJECTIVES

To develop measures of contractor effectiveness for quality assurance at various levels in the DCMC quality organization structure and contractor reorganization structure. Measures must begin at the contractor facility level and roll up according to volume of business.

To provide access to QUEST measures from the first line supervisor level to upper management in DLA.

SECTION 2 METHODOLOGY

2.1 DATA

2.1.1 DATA SOURCES

QUEST 4.0, like its predecessors draws upon data files available in the Mechanization of Contract Administrative Service (MOCAS) system. The accuracy of QUEST measures is heavily dependent on the accuracy of the data in these files. There is one file which is the primary source of QUEST data named the Performance History File, a subset of QAMIS. This file is comprised of monthly data (12 months) reported by the Quality Assurance Representative (QAR) through the QAMIS. Most of the data fields used by QUEST in the Performance History File are believed to be relatively accurate by the Study Advisory Group (SAG). In addition to the Performance History File, other data sources used by QUEST are:

Facility Profile - Another subset to QAMIS provides descriptive information on the contractor.

Product Quality Deficiency Report (PQDR) File (YP21) - MOCAS file, source of data for PQDR portion of QUEST rating.

Contractor Alert File - MOCAS file used to help identify contractors that are experiencing difficulties in contract administration.

ADRS File - MOCAS file used to associate "in the clear" the name of the contractor and the cognizant contract administration organization for report distribution. The ADRS file contains administrative information on contractors by Commercial and Government Entity Code.

2.1.2 EXCLUSIONS

Contractors are excluded from QUEST if their number of active months in the last 12 months is smaller than the model parameter. The default model parameter is currently 3 active months. QUEST scores are only generated for the contractor's active months. A month is considered active if during that month, a PDQR was closed or in-house hours were reported against the contractor as identified by a Commercial and Government Entity Code (CAGE). For example, if there were less than three months of activity in a CAGE within the last twelve months, the CAGE is considered inactive and will not be measured at all. If there were three or more months of activity in a semi-active nonresident CAGE, QUEST scores will be generated only during a month where there was activity. For active nonresident and resident contractors, QUEST should produce a set of measurements each month.

2.1.3 DATA LINKING

All data sources used by QUEST are linked together by CAGE Code. In QAMIS some large contractors which have a single CAGE Code are broken down into more discrete entities using "locally assigned" CAGE codes. This may cause some difficulties in the measurement process if all the source files do not employ the same "locally assigned" CAGE codes as the Performance History File. For example, if all PQDRs are reported against the original CAGE, the PQDR QUEST rating for the "locally assigned" CAGES will be inflated and the QUEST rating for the original CAGE will be too low.

2.2 QUEST INDICATORS

Traditionally with DLA, quality of product is not measured directly but rather through the use of "negative" indicators such as complaints, deficiency reports and other signals that there are nonconformance problems. Likewise, QUEST 4.0 is an amalgam of negative quality indicators. Contractors that have a high incidence rate of negative quality indicators will fare poorly with QUEST. Absence of negative quality indicators will yield beneficial QUEST ratings. The seven components are described as follows, in order of importance to the QUEST score:

2.2.1 CORRECTIVE ACTION REQUESTS (CARs)

When a contract nonconformance is observed the QAR is supposed to generate a CAR. There are four levels of CAR (verbal and written, Method C, Method D, and Method E). Each level is weighted in the model and then summed to produce a CAR indicator value. Weights for CARs and other indicators were determined by the SAG and can be found in a separate DORO publication entitled QUEST 4.0 Documentation.

2.2.2 PRODUCT QUALITY DEFICIENCY REPORTS (CUSTOMER COMPLAINTS)

When an investigated PQDR is closed (a new feature of Release 4.0, previous releases measure PQDR based on date received), and if the PQDR is determined to be caused by the contractor, the PQDR is considered valid. Valid PQDRs are weighted by the age of the contract since more recent contracts are prone to reflect current processes within the plant.

2.2.3 PRODUCT AUDIT RESULTS

The ratio of Product Audits with CARs to total Product Audit is computed to represent the proportion of time nonconforming product was released for government inspection.

2.2.4 WAIVERS

Waivers are requested changes to contract requirements generated during production. The weighted sum of Type I and Type II Waivers is computed. This is a new feature since the prior QAMIS only reported total waivers. Per DLAM 8200.5, a Type I nonconformance affects "performance, durability, interchangeability, effective use or operations, weight or appearance

(where a factor), health or safety." Type II are all other nonconformances. Because Type I waivers are more consequential, they carry more weight in assessing performance.

2.2.5 MATERIAL REVIEW BOARD (MRB) ACTIONS

Nonconformances that do not affect form, fit, or function are often reported through an MRB procedure. The total MRB actions reported in a month is used to assess performance.

2.2.6 DEVIATIONS

Deviations are requested changes to contract requirements generated prior to production. The number of deviations reported in a month is used to assess performance.

2.2.7 ENGINEERING CHANGE PROPOSALS (ECPs)

ECP is a process used to change the specifications on the current contract and future contracts. The weighted sum of Class I and Class II ECP is computed. This is a new feature of Release 4.0 since early QAMIS data only reported total ECP counts. The definition of Class I is provided in DLAM 8200.5, listing five major criteria and twenty-one subcriteria. Generally, Class I ECPs are more technically significant and therefore are weighted more than Class II by QUEST 4.0.

2.3 INDICATOR MEASUREMENT

Each of the seven indicators described in the previous section is measured on a common scale of 0 to 100 percent using a method called Technique for Order Preference by Similarity to Ideal Solution (TOPSIS). TOPSIS is used to reduce a multi-dimensional variable to a single value. In QUEST each indicator has two variables of interest, namely trend and peer comparison. Depending on the combination of trend and peer comparison, a score is computed where 100 percent represents the best possible combination of variables (ideal condition) and 0 percent represents the worst case (negative ideal). TOPSIS measures each contractor against these fixed reference points, creating a percent rating which is the distance of the contractor's trend and peer comparison from the negative ideal to the total distance from both ideal and negative ideal. Therefore, for example, a contractor with an 80 percent rating for a given indicator means that the contractor's distance from the worst case is 80 percent of the total distance from both reference points. The higher the distance from the worst, the better the contractor's rating. Thus, QUEST measurement, from the perspective of the contractor, creates an incentive for continuous improvement and "best of class" performance.

2.3.1 TREND MEASUREMENT

QUEST computes a trend by looking back up to six months (less than six month trend computation is used for semi-active nonresidents when six months of historical data is not available). The six month interval is divided into two equal intervals (recent and less recent) and the average indicator value is taken for each interval. The trend is computed from the two averages and normalized on a scale of -3.0 to +3.0. Minus three is the ideal condition, representing a steeply decreasing trend (since indicators are negative indicators, less is best).

Plus three, a steep rise in trend, is the worst case or negative ideal. Zero trend is a flat trend, indicating neither improvement nor worsening of the indicator.

Trend contributes half the total weight in computing a QUEST rating for each indicator. Peer comparison contributes the other half. There are two exceptions to this rule. The first is for contractors that have a totally clean record on an indicator. They have no recorded incidence within the measurement period (currently 1 year). The QUEST indicator score is automatically set to 100 percent for any contractor that has no history for the indicator. Otherwise QUEST would compute a flat trend and penalize the contractor relative to other contractors that were experiencing the indicator yet improving. The second exception for the 50/50 rule is for "problem" contractors. Trend for problem contractors receives 60 percent of the weight for all indicators.

"Problem" contractors are defined by QUEST as any contractor that meets at least two of the following conditions.

- Is currently on the Contractor Alert list for any reason.
- Has more than one standard deviation above average in PQDRs (complaints) above peers.
- Has received a method C CAR within the last three months.
- Has received a method D CAR within the last year.
- Has received a method E CAR within the last three months.

2.3.2 PEER COMPARISON

The second component of an indicator measurement relates to how the contractor's reported indicator compares with preset, fixed statistics on similar contractors taken for calendar year 1992. QUEST converts the monthly indicator to a scale of -3.0 to +3.0 where zero is the peer group average; the converted value represents how many standard deviations the contractor falls below (minus values) or above (plus deviates) the peer group average. Minus three is the ideal condition and plus three is the negative ideal for TOPSIS measurement.

Peer groups are determined primary by Facility Profile data by assigning a peer group number between 1 and 999. Each peer group generally has the following factors in common.

Facility Type	- Resident or Nonresident
Commodity	- Per DLAM 8200.2
Provision	- MIL Q, MIL I or Other
Operation Type	- Manufacturer or Maintenance

Size (Resident Facilities) - Based on the number of Government QA Specialists (QAS) which is determined by the available hours reported in the Performance History File. Size groups are 0-2, 3-7, 8-20, 21-35, and over 35.

In some instances, to obtain sufficient numbers of similar contractors, commodity codes are combined. A separate report is available which lists contractors nationwide by peer group.

2.4 QUEST RATINGS

After each indicator is measured, an overall rating is formed by taking a weighted average of the individual indicators. The weights were determined by the SAG to be as shown in Table 2-1.

Table 2-1 . Weight Factors for QUEST Indicators

<u>FACTOR</u>	<u>WEIGHT %</u>
CAR	22
PQDR	21
Product Audit	20
Waivers	15
MRB	11
Deviations	7
ECP	<u>4</u>
	100

In addition to a numeric rating, a letter grade of A, B, C, D, or F is assigned by comparing the numeric rating to peer group statistics. QUEST ratings of 100 percent or those that are well above peer averages translate into an "A" grade; in like manner, very low numeric ratings compared to peer averages result in an "F" rating. A "C" rating is about average.

2.5 ORGANIZATIONAL ROLL UPS

QUEST numeric scores are rolled up to compute averages for each level based on the QA Organization Code. Thus, section, branch, division and district level scores are available each month. Organizational averages are computed by factoring each CAGE (contractor) according to the size of the contractor as measured by the hours of reported time attributed by the government QASs' assigned. Therefore, large contractors contribute more to organizational roll ups than small contractors. Section roll ups also breakout the rating by resident versus nonresident contractors within the section.

2.6 CORPORATE QUEST

Ratings are now available for large Defense contractors that cross district boundaries. A separate report is available which consolidates major Defense contractor's QUEST ratings by

CAGE into an overall letter grade. The Corporate grade is equivalent to a Grade Point Average (GPA) generated by a university. Individual CAGE letter grades are converted to a 4.0 point scale (A = 4 points, B = 3 points, etc) and a corporate cumulative average is computed by factoring in the size of the CAGE. Just like some college courses carry more credit hours and thus contribute more to the GPA; a larger facility in a corporation will contribute more to the corporate average than a smaller one.

2.7

QUEST VALIDATION

As previous versions of QUEST were tested prior to implementation, the SAG advised that because of the significant changes associated with Release 4.0, revalidation was required. A Mann-Whitney hypothesis test was designed whereby QUEST scores were compared against expert opinion concerning the Quality Assurance performance of a set of contractors. Fifty-eight resident facilities and 60 nonresident facilities were judged by experts to be either "excellent" or "poor" concerning quality. The degree with which expert opinion matched to QUEST ratings was measured and evaluated at the 95 percent confidence level.

SECTION 3 FINDINGS

3.1 QUEST REPORTS

QUEST reports are available monthly through hard copy printouts generated by the Mechanization of Reports Distribution System to the division level. On-line access is also available through the DMINS system. The hard copy report, shown as Table 3-1, is similar to previous reports. The only two changes are that a six month moving average is shown for the QUEST score and facilities that have experienced a change in peer group are identified with a "#" after the peer group number. An explanation of the column headings of Table 3-1 is provided for users unfamiliar with the earlier versions of the report. A similar report for Corporate ratings is shown in Table 3-2. Corporate reports are currently available for HQ DLA users of the DLA Operations Research Analysis Network.

3.1.1 PAGE HEADERS

Unless a section has more than 50 separate contractors, each section will receive a one page summary of QUEST information. The page header contains the year and month, the QA Organization Code and the Contract Administration Code.

3.1.2 COLUMN HEADINGS

The following columns appear:

CAGE: Commercial and Government Entity of the contractor
NAME: In the clear name of the contractor
QAR: Code of the QAR assigned to the contractor
COMM: Primary Commodity Code
PVN: Highest QA Provision for active contracts
QAS: Number of QA Specialist-function of hours reported
CA: CAR Score
PQDR: PQDR Score
PA: Product Audit Score
WVRS: Waiver Score
MRB: Material Review Board Score
DEVN: Deviation Score
ECP: Engineering Change Proposal Score
TOTAL SCORE: QUEST Score for current month
FIRST PRIOR MONTH: QUEST Score for last active month
SECOND PRIOR MONTH: QUEST Score for next to last active month
SIX MONTH AVG: Average of most recent six active months
PEER GRP: Peer Group number assigned by QUEST
PEER RTG: QUEST rating relative to peers

Table 3-1. Sample QUEST 4.0 Report for a Section

6 93 QUEST REPORT FOR SECTION A22										AZ		CONTRACTOR EFFECTIVENESS				ECP	TOTAL SCORE	FIRST PRIOR MONTH	SECOND PRIOR MONTH	SIX MONTH AVG	PEER GRP/RTG
CAGE	NAME	QAR	COMM/ PVN	QAS	CA	PQDR	PA	WVRS	MRB	DEVN											
TX634	SAFT AMERI	ASR	E4 A	2	42.2	100.0	15.2	30.9	100.0	72.3	93.3	58.1	100.0	100.0	100.0	55.9	88.3	80.1	627 F		
O2693	MILLS MFG	AYH	C4 B	1	42.7	50.0	71.1	100.0	100.0	100.0	100.0	70.9	100.0	100.0	100.0	78.7	96.3	78.4	583 F		
O5088	KEARFOTT G	A4W	K3 A	3	33.6	100.0	35.3	100.0	100.0	100.0	100.0	72.5	100.0	100.0	100.0	82.0	79.8	79.0	711# D		
43500	DIAMOND BR	AXQ	C4 C	0	5.8	100.0	0.9	100.0	100.0	100.0	100.0	59.5	100.0	100.0	100.0	100.0	100.0	96.5	60 F		
OCG91	JET RESEAR	AK3	B1 A	0	8.0	100.0	40.6	100.0	100.0	100.0	31.2	65.1	100.0	100.0	100.0	78.9	95.3	74.5	25 F		
28052	WELCO ENT	AXQ	C3 B	0	48.2	100.0	38.3	100.0	100.0	100.0	100.0	76.3	100.0	100.0	100.0	69.0	75.0	79.7	56 D		
34860	BRANFORD W	AK3	E1 C	0	50.0	100.0	50.0	100.0	100.0	100.0	100.0	79.0	100.0	100.0	100.0	79.0	62.3	90.2	89 F		
53591	SCHWITZER	AK3	V2 C	0	100.0	100.0	15.2	100.0	100.0	100.0	100.0	83.3	100.0	100.0	100.0	84.6	100.0	97.4	318. D		
58614	COMMUNICAT	AK3	E3 B	0	62.4	100.0	100.0	100.0	100.0	100.0	100.0	91.6	100.0	100.0	100.0	82.2	94.4	90.0	104 C		
5Y609	DUOTECH SE	A25	M3 B	0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	224 A		
51829	CR INDUSTR	A25	M1 B	0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	218 A		
51917	SQUARE D C	AK3	E3 C	0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	105 A		
6T122	TORRINGTON	AX6	L4 C	0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	96.5	218 A		
7M138	UNITED CHE	AX6	E3 C	0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	204 A		
3U476	HONEYWELL	AX6	E3 C	0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	105 A		
4M221	CONRAD IND	AX6	C5 C	0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	63 A		
4L329	LIONS CLUB	AX6	C1 C	0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	51 A		
4H618	CLIFTON PR	A25	E6 B	0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	113 A		
20261	MANESS MFG	A25	G1 C	0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	123 A		
23471	PALMER INS	AX6	G6 B	0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	96.5	137 A		
23109	MILLS MFG	AX6	C4 B	0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	59 A		
1006A	DCAS RESID	ASE	G8 C	0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	144 A		
11502	INTERNATIO	AX6	L4 C	0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	204 A		
16190	NCI INC	AX6	A1 B	0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	2 A		
OEHX4	BUSSMAN	AK3	E3 B	0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	95.8	104 A		
O2939	AID CORP T	A25	A7 B	0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	20 A		
OSXX5	ASHVILLE J	AK3	P7 C	0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	93.6	285 A		

WTD AVG A22
RESIDENT
NONRESIDENT
COMBINED

67.4
93.9
79.2

97.8
97.1
97.5

90.8
100.0
94.9

100.0
100.0
100.0

77.0
100.0
87.2

34.6
85.2
57.1

91.7
100.0
95.4

38.0
86.4
59.5

90.8
100.0
94.9

100.0
100.0
100.0

77.0
100.0
87.2

34.6
85.2
57.1

91.7
100.0
95.4

If a section has both resident and nonresident contractors, the resident appear first followed by a blank line. The order of appearance of contractors is by increasing QUEST Scores for the current month. Problem contractors are designated with an "*" before the CAGE Code. If a contractor has changed peer groups, a "#" appears after the Peer Group number.

Roll ups by organization appear at the bottom of each page. Section roll ups are weighted averages of all contractors within a section; Branch roll ups, the weighted average of contractors within the branch, appear after the last section roll up, etc. Roll ups are available through the district level.

Table 3-2. Sample Corporate QUEST Report

DISTRICT	CAGE	CORPORATE NAME	CA	PQDR	PA	WVRS	MRB	DEVN	ECP	QUEST	RATING	NQAR
M	OHBH2	HUGHES DISPLAY PRO	100.0	19.6	20.0	100.0	100.0	50.0	100.0	51.0	D	0
M	21538	HUGHES INDUSTRIES	100.0	21.0	60.0	100.0	100.0	0.0	100.0	100.0	D	0
W	2F259	HUGHES AIRCRAFT CO	100.0	77.8	40.0	100.0	100.0	99.8	100.0	100.0	A	1
W	3U331	HUGHES AIRCRAFT CO	100.0	40.4	40.0	22.6	100.0	73.5	100.0	100.0	C	4
W	15090	HUGHES AIRCRAFT CO	50.0	78.7	60.0	48.7	100.0	100.0	100.0	100.0	A	23
W	1181M	HUGHES AIRCRAFT CO	100.0	100.0	70.0	53.0	100.0	100.0	100.0	100.0	A	2
W	05869	HUGHES AIRCRAFT CO	45.9	53.1	55.0	42.6	100.0	70.8	71.9	100.0	C	7
W	00816	HUGHES AIRCRAFT CO	100.0	100.0	80.0	100.0	100.0	100.0	100.0	100.0	A	0
W	ODGR4	HUGHES ENTERPRISE	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	A	0
W	53669	HUGHES AIRCRAFT CO	100.0	100.0	60.0	100.0	100.0	100.0	100.0	100.0	A	0
W	53670	HUGHES AIRCRAFT CO	100.0	100.0	80.0	100.0	100.0	100.0	100.0	100.0	A	0
W	55267	HUGHES AIRCRAFT CO	100.0	54.7	40.0	100.0	100.0	54.8	100.0	100.0	C	2
W	7238E	HUGHES AIRCRAFT CO	70.6	58.8	55.0	54.4	50.0	61.4	16.6	50.0	F	6
W	7239J	HUGHES AIRCRAFT CO	87.2	74.6	70.0	39.3	25.5	54.3	42.1	50.0	F	3
CORPORATE TOTAL											B	
DISTRICT	CAGE	CORPORATE NAME	CA	PQDR	PA	WVRS	MRB	DEVN	ECP	QUEST	RATING	NQAR
C	76301	MCDONNELL DOUGLAS	44.1	39.9	45.0	18.7	25.8	69.1	40.0	100.0	F	46
C	69236	MCDONNELL DOUGLAS	24.7	55.3	55.0	29.0	18.7	73.9	100.0	64.7	F	6
C	OASG3	MCDONNELL DOUGLAS	100.0	74.2	55.0	31.3	100.0	69.0	100.0	100.0	C	4
C	OFC43	MCDONNELL DOUGLAS	53.0	60.0	55.0	47.5	100.0	38.6	10.2	100.0	D	5
C	12464	MCDONNELL DOUGLAS	79.8	45.8	55.0	22.9	100.0	65.4	100.0	100.0	C	5
M	OD7A6	MCDONNELL DOUGLAS	100.0	100.0	55.0	31.4	100.0	100.0	100.0	100.0	A	2
S	OKPR9	MCDONNELL DOUGLAS	72.7	100.0	76.9	100.0	32.3	71.4	100.0	79.7	D	0
S	0002A	MCDONNELL DOUGLAS	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	A	0
S	0032A	MCDONNELL DOUGLAS	63.3	100.0	100.0	100.0	65.4	100.0	38.0	85.5	C	5
S	88314	MCDONNELL DOUGLAS	100.0	19.6	100.0	100.0	77.2	100.0	87.2	79.8	F	4
S	88277	MCDONNELL DOUGLAS	100.0	33.7	45.0	13.0	100.0	34.3	100.0	100.0	F	29
S	28861	MCDONNELL DOUGLAS	40.2	100.0	44.8	84.0	77.4	100.0	92.2	70.6	F	6
W	18355	MCDONNELL DOUGLAS	50.0	49.6	55.0	23.1	100.0	34.4	100.0	100.0	C	9
W	1199M	MCDONNELL DOUGLAS	100.0	60.6	40.0	100.0	100.0	100.0	100.0	100.0	A	8
W	8V613	MCDONNELL DOUGLAS	54.1	88.5	60.0	63.5	100.0	19.6	5.1	13.2	F	23
CORPORATE TOTAL											D	

VALIDATION FINDINGS

Significant correlation was achieved at the DCMC level for both resident and nonresident facilities when comparing QUEST scores to expert opinion. The Mann-Whitney test statistic for nonresidents was -5.07 and -2.533 for residents, resulting in Type I error of nil and 1.2 percent respectively. At the district level, most comparisons also resulted in significant correlation but not always.

QUEST 4.0 is the only truly objective, automated and comprehensive measure of contractor QA performance available. As such, it should be useful to DCMC managers to evaluate the effectiveness of contractors, their IQUE programs and their policies. Also, QUEST could be used as a possible tool for resource allocation. Management's attention should be directed to contractors and sections which continually exhibit low QUEST scores.

SECTION 4 CONCLUSIONS

QUEST 4.0 is a tool for evaluating Contractor QA performance. It provides management visibility on the overall effectiveness and subcomponents from the plant level to the corporate level and from the QAR level to the district level. The measurement is based on objective data and subjective weights provided by experts. The results are reliable and verified by statistical analysis.

SECTION 5 RECOMMENDATIONS

We recommend that QUEST 4.0 be implemented by DCMC. A major part of implementation should be a concerted effort by the Study Advisory Group to develop and execute a QUEST training program for managers and other potential users. This training program should stress potential beneficial applications by DCMC personnel to increase the use and acceptance of QUEST.

We also recommend that Contract Management Directorate at HQ DLA appoint points-of-contact to be trained to extract QUEST and Corporate QUEST data for senior managers until such time as QUEST data becomes incorporated into the Executive Information System.

Finally, we recommend that analytical resources be planned for the inevitable update, QUEST 5.0. History indicates a need to revise this model about every two years. FY 95 resources should be allocated to this effort.

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